Northstar Model N222 Detectors

Presented by:

Milton I. Dean, PE

Northstar Model N222 Detectors

Do we have a problem?

Northstar Model N222 Detectors

January 2010:

- Division 9 – Returned 3 detectors for evaluation
  - One detector was DOA. New firmware was loaded and the detector worked properly.
  - The remaining two detectors passed our operational tests

Northstar Model N222 Detectors

July 28, 2010:

- Division 10 – Received email from Sean Epperson indicating numerous intermittent failures
  - Permanent calls
  - Chattering
  - Dropping calls

Northstar Model N222 Detectors

July 29, 2010 email to technician supervisors asked:

- How many were installed in the last year?
- How many were dead-on-arrival?
- How many exhibited intermittent problems on new loops?
- How many exhibited intermittent problems on older loops?
- Did you verify the older loops were not shorted to ground and exhibited a reasonable circuit resistance?

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July 29, 2010 email to technician supervisors asked:

- Could crosstalk be eliminated by adjusting the frequency settings and insuring the loop/lead-in conductors were properly twisted?
- In you opinion are the sensitivity settings comparable to those of the EDI and Reno detectors?
- If you had any specific problems, please give us the details.

Northstar Model N222 Detectors

Summary of two division responses to email:

- Division 4
  - Total of 8 DOA
  - About 15 detectors exhibited problems with new loops
  - About 20 detectors exhibited problems with older loops
  - Concern about the emergency maintenance costs with intermittent problems

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Summary of two division responses to email:

- Division 14
  - DOA – None reported
  - No reports of problems with new loops
  - Reported two intersections with problems with older loops
  - They changed out the detectors to Reno's

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Field Investigation Results – September 2010

- Two detectors were tested by the Traffic Electronics Center and Northstar Controls and were found to operate properly
- An examination of the newly installed loops showed several non-compliant construction methods
    - Loop wires were carried back to the cabinet termination panel
    - Loop wires were not twisted in the junction box, conduits, or controller cabinet

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Detector Testing and Repair at Traffic Electronics Center (TEC)

Of the Northstar detectors returned:

- 99 units operated properly
- 32 units were sent to Northstar for warranty repair 2005 through 2008
- 31 units were repaired by the TEC

In the last 3 years we have supplied over 8000 Northstar detectors from the Depot.

If you include warranty related repairs back to 2005, the failure rate is less than 1 %.

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Do we have a problem?

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If you think you do, we want to meet with you on-site to inspect the loop installation before we assume the detector is defective.

Please keep in mind that the most current loop installation methods are outlined in plate drawings, not in the Standard Drawings document.

Metal Pole Span Attachment

Presented by:

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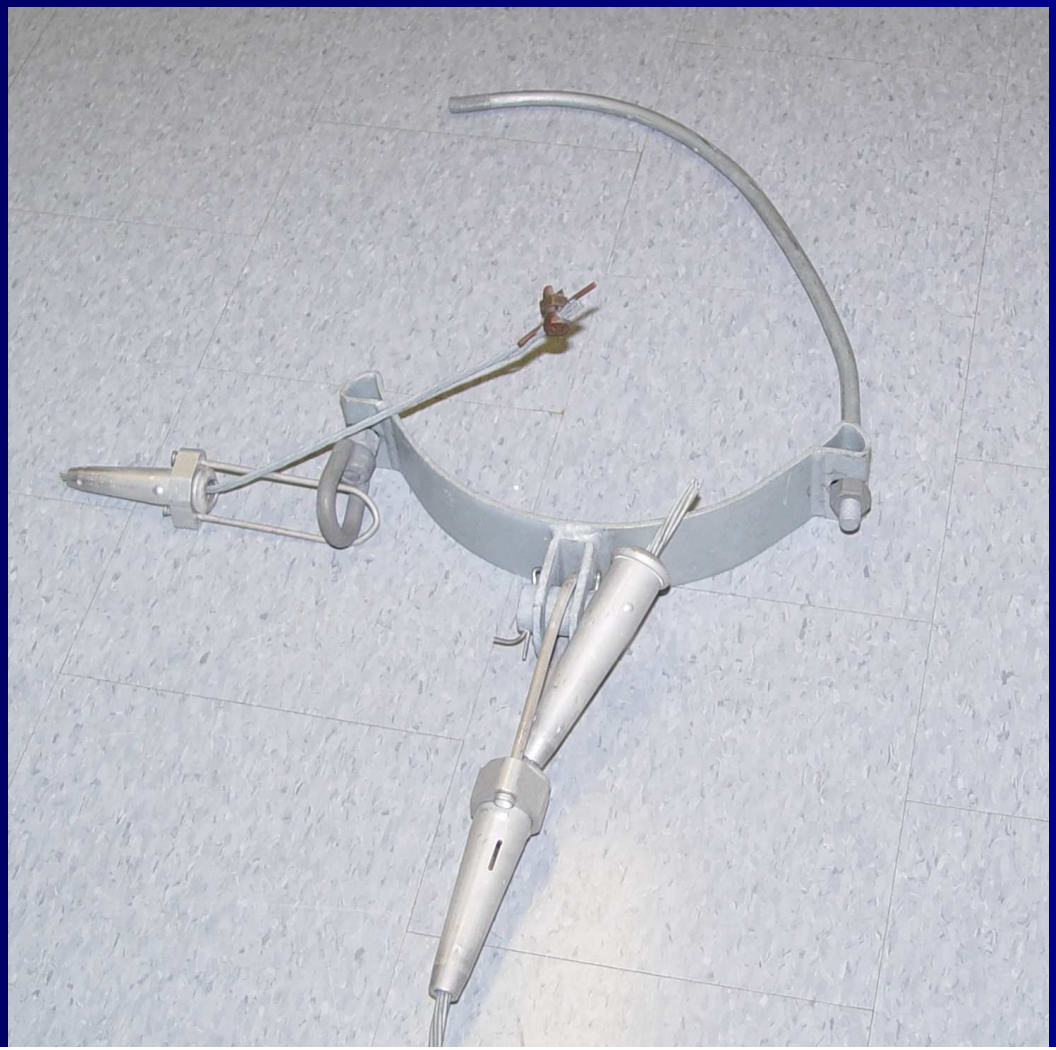
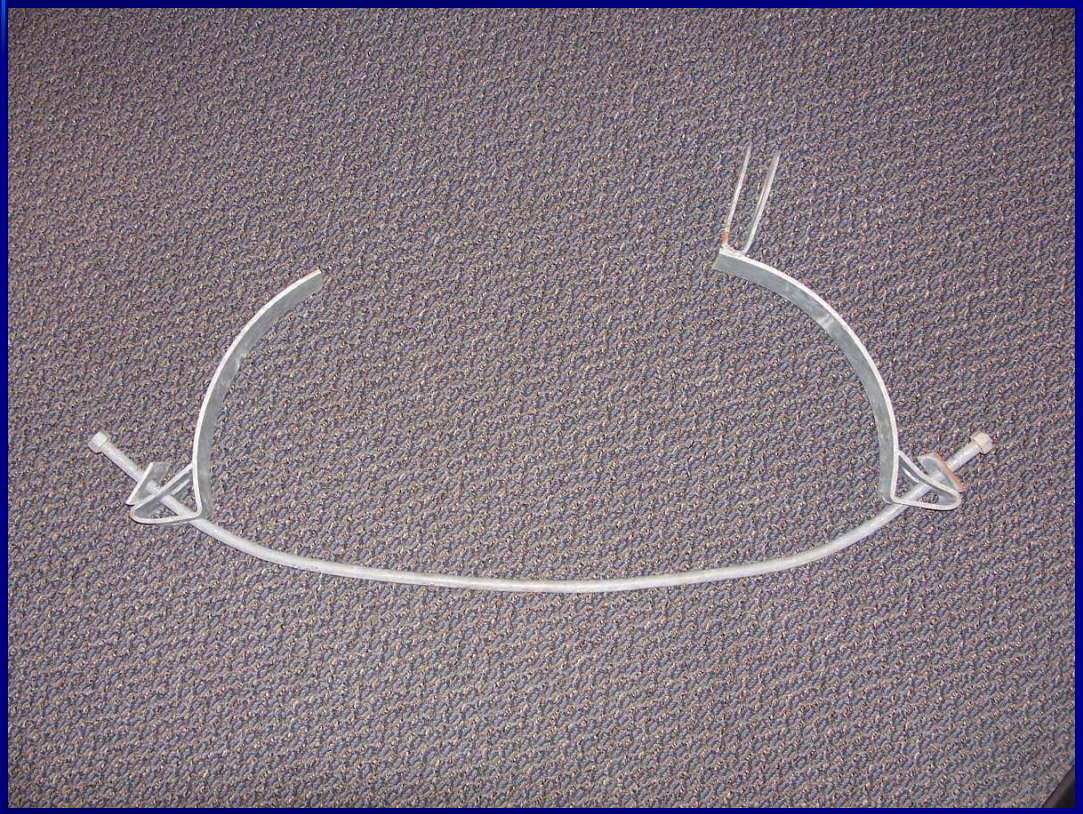
Metal Pole Span Attachment



Division 6 Failure (2003)

Note thimble-eye nut was attached to threaded u-bolt. The weight of the communication span caused the threaded portion of the bolt to fail causing the signal head span to fall.

Metal Pole Span Attachment



Division 2 Failure (2010)

Formed band failed at the weld. Materials and Test indicated some concern about the welding process. Further review revealed two signal spans were attached to this one clamp.

Metal Pole Span Attachment

Division 2 Failure

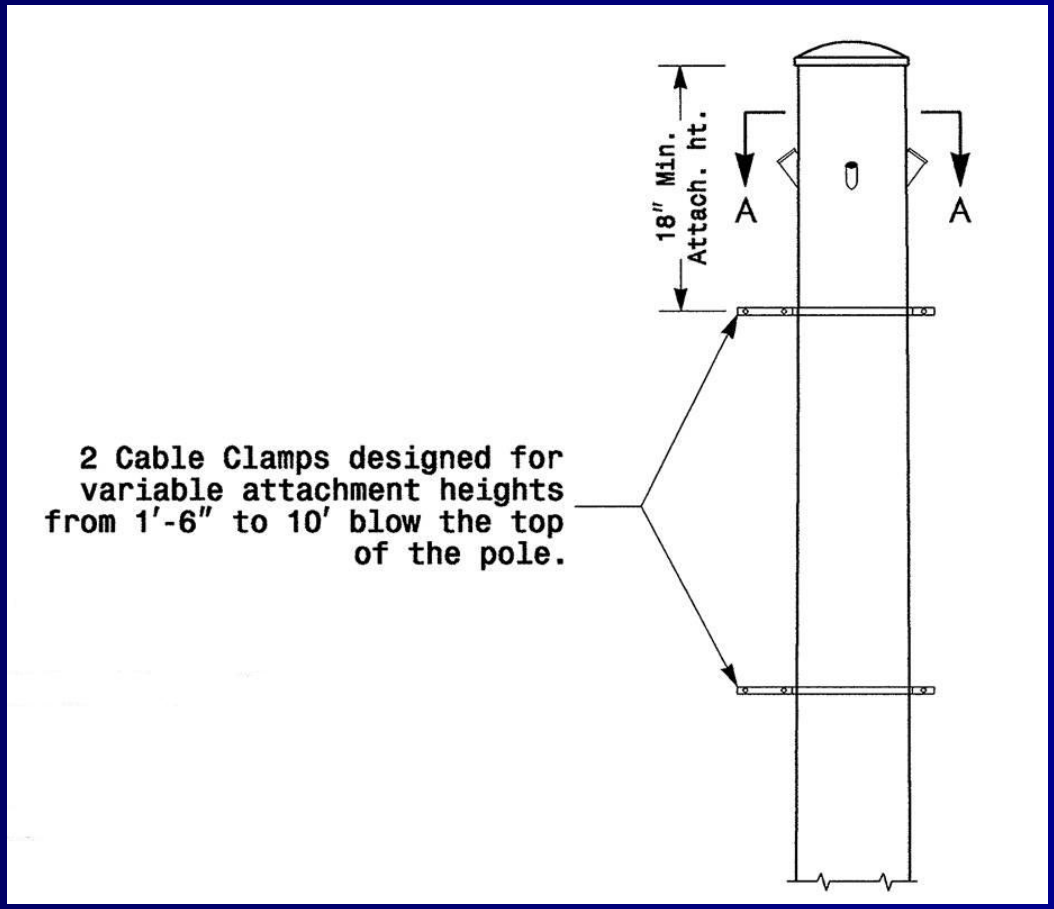
Further review revealed two signal spans were attached to this one clamp.

Metal Pole Span Attachment

February 2010 email to technician supervisors and DDTE's:

- Noted problem of recent failure in Division 2
- Requested each Division to check their poles
- Divisions requested to take corrective measures where multiple spans were attached to one pole clamp

Metal Pole Span Attachment



Metal Pole Drawing M3

Drawing requires 2 pole attachment clamps for each pole.

Metal Pole Span Attachment

Quoted from PSP ver 6.7:

For each strain pole, provide 2 messenger cable (span wire) clamps and associated hardware for attachment of support cable of the messenger cable suspension. Ensure that diameter of the clamp is appropriate to its location on the pole and that the diameter of the clamps is appropriately designed to be adjustable from 1'-6" below the top, down to 6'-6" below the top of the pole. Do not attach more than one support cable to a messenger cable clamp.

LED Signal Module Replacements

Presented by:

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LED Signal Module Replacements

- Performance warranted for 5 years
- For lack of a more results-based criteria, we are recommending replacement of LED modules at the end of their warranty period.
- Pixilated versions of the LED circular indications have been on the street for well over 5 years and need to be replaced.
- Some pixilated versions of the LED arrow indications have reached the end of the warranty period

LED Signal Module Replacements

- Contract prices very reasonable
  - 12” Red Circular - $ 27.50
  - 12” Yellow Circular - $ 36.00
  - 12” Green Circular - $ 36.00

Payback period for all three colors = ½ year

LED Signal Module Replacements

Recycling LED Signal Modules:

- Central Inventory has a procedure for obtaining Gaylord boxes
- Central Inventory will pickup full boxes and deliver to the recycling vendor
- For more information contact William Stone or Mike Jefferys with Central Inventory

Questions?

FOR MORE INFO...

Please contact Milton Dean, PE at:
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